j) Design can house water jets, and in larger vessels primary engines. Both reduce the intrusion of propulsion systems into the personal accommodation spaces and increase the versatility of interior design space.

k) Design results in an extremely shallow hull draft utilizing water jets housed in the outboard chines. This hull can travel over shallow shoals conventional boats would not manage.

l) Design protects propellers during grounding.

m) Design can have increased beam for the same displacement when compared to a typical vee-hull because the outboard chines support the vessel. The added beam allows for increased interior and aft deck space. It also enhances the wing-in-ground effect by providing a larger surface providing lift.

n) Design provides enhanced tracking during turns and reduces healing as a result of the outboard chines.

o) Design can be optimized to produce less wake at speed through "wake canceling" providing less drag over conventional hulls.

Further objects and advantages achieved with the advent of this invention will become apparent from a consideration of the drawings and ensuing description.

Claims

1. A hull for conveyance across a fluid compromising:
   a) a central hull with a buoyant section
   b) outboard chines which extend below said central hull providing a means to trap air, water, or a mixture of air and water, providing lift to the hull

17. The hull of claim 14 wherein the means of producing wing in ground effect is enhanced or produced by adding a step in said deep vee bow.

Description of Patent Art

An example of a 32-foot Sport-fisherman vessel is provided. The body plan shown in *Figure1* illustrates the outboard chines' transition below the centerline vee-section of the hull.

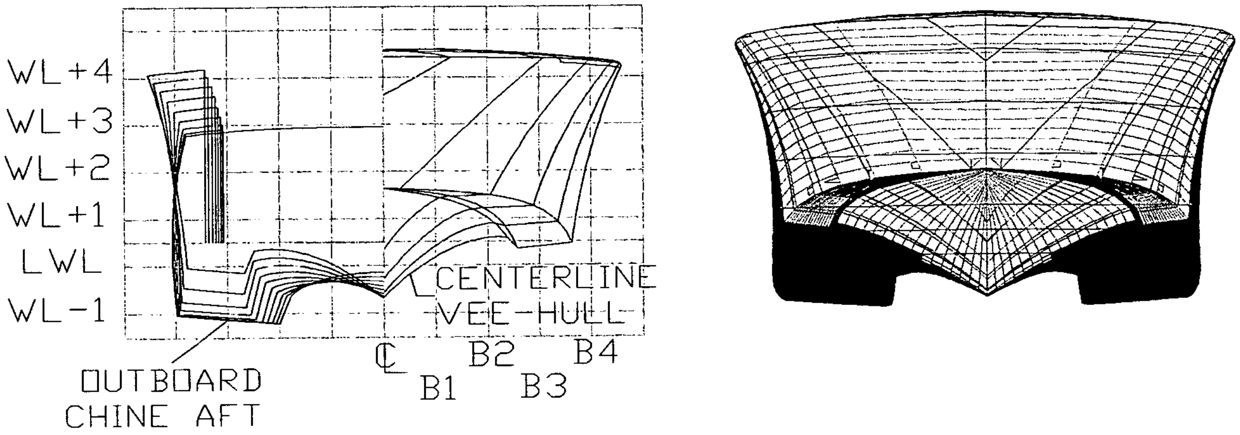

FIGURE 1
BODY PLAN

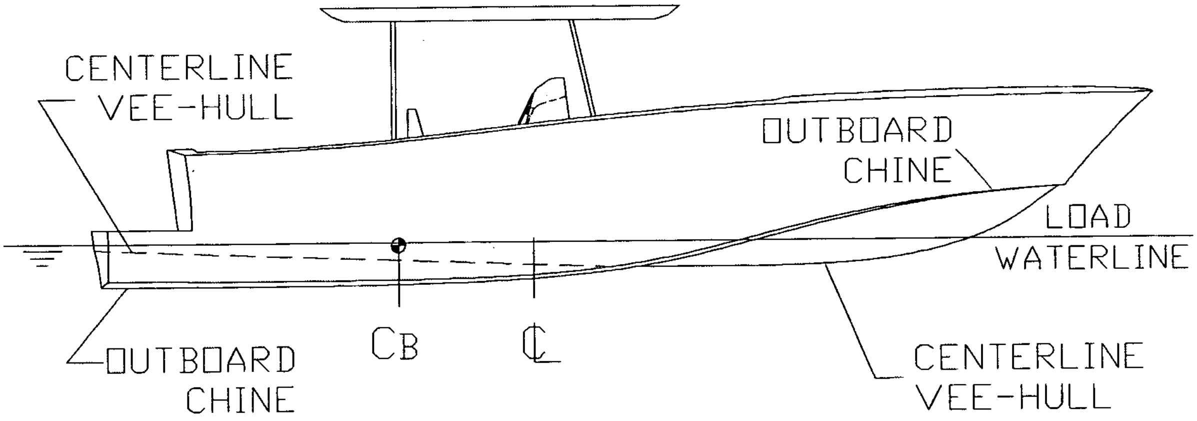

FIGURE 2
PROFILE VIEW

The transition of the chines from above the centerline vee-hull forward to below the centerline vee-hull aft is made clearer in *Figure 2* showing the profile of the vessel. Note that the centerline vee-hull is at its deepest point forward of midships, the middle of the boat, and transitions to a much shallower depth at the transom. This transition may be required to ensure proper buoyancy distribution as well as enhancing the wing-in-ground effect created by air trapped between the outboard chines. Alternately the centerline vee-hull may remain at a fixed depth with the outboard chines extending below the centerline vee-hull in the aft sections.

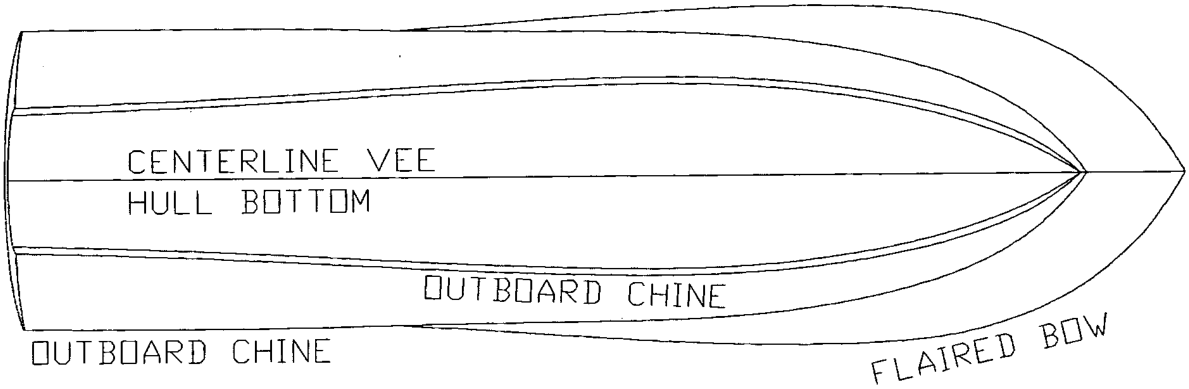

FIGURE 3
PLAN VIEW OF HULL BOTTOM

The notable increase in width of the outboard chines as they transition aft, shown in plan view of hull bottom (*Figure 3 and in Figure 4*), coupled with the increased depth in the water provide increased transverse stability over conventional vee-hull vessels. Note that the chines can have a flat bottom or an angled bottom, either inboard or outboard. The example shown is angled deeper as the chine moves inboard. The inboard angle of the chine increases the wing in ground effect during planning without impairing the vessel during turns. The opposite angle, an outboard angle, will provide a similar effect but in higher performance vessels this can create some difficulty in turning at speed. In high performance hulls, turning can be improved by adding to the deeper portion of the chine a small second upward angle or an arc. This will allow water to flow under or around the chine more easily and prevent "hobby horsing" of the hull in turns.

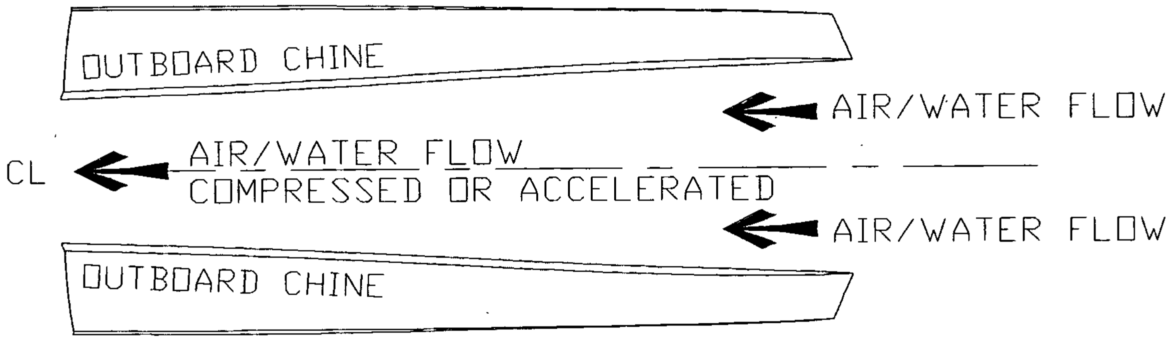

FIGURE 4
OPENING BETWEEN OUTBOARD CHINES

Figure 4 shows the flow of water and air trapped between the outboard chines. Because the outboard chines increase in width as they transition aft, the open volume between the outboard chines decreases. Air and water passing between the chines must be compressed or accelerated as a result of the reduced open volume. The result is to increase lift on the hull, which reduces drag.

OIPE JC56
FEB 1 8 2004
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The USPTO has received the following clarifications requested regarding Hybrid vee-hull / wing-in-ground effect vessel, application number 10/679,534, confirmation number 3976.

- Pages 1 and 9
- Replacement drawings for figures 1,3, and 4

Signed by USPTO representative

______________________________ Date:__________